

Good morning, good day: A diary study on positive emotions, hope, and work engagement

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Abstract

The objective of this diary study was to look at the potential positive *within-person* relationships between positive emotions, work-related hope, and the three dimensions of work engagement on a daily level (i.e. vigor, dedication, and absorption). Following Broaden-and-Build theory and Affective Events Theory, it was expected that the experience of positive emotions would cause hope, which in turn would lead to a state of vigor, dedication, and absorption. The study was conducted among 59 employees of a Dutch university, who filled in a diary questionnaire for five consecutive working days, twice a day. As expected, the experience of positive emotions had an indirect effect on the level of vigor, dedication, and absorption through hope across days. So, it seems that an individual and daily perspective on work engagement is particularly worthwhile and provides valuable insights to enhance employee engagement in practice.

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Introduction

The emergence of knowledge work has resulted in a growing importance of psychological capabilities of employees in order to perform. In other words, the mental health of employees has become more essential for organizations to survive (Weehuizen, 2008). In this sense, it is important that employees feel engaged in their work. Ample research has addressed the long-term effects of environmental factors like job resources and home resources on work engagement (e.g. Hakonen et al., 2008). Recently, individual characteristics such as self-efficacy and optimism have been linked to work engagement too (e.g. Xanthopoulou et al., 2009b). These individual characteristics have been recognized as being relatively stable. Yet, every employee probably experiences good and bad working days, relative to their own baseline characteristics (Sheldon et al., 1996). A relevant question then is: what makes employees engaged on a daily basis? In this study, we take on an individual, daily perspective on work engagement. More specifically, we explore whether the experience of positive emotions and hope can be considered daily antecedents of work engagement. This way, we hope to illuminate what makes a good working day, thereby providing advice for practitioners and organizations on how to engage the workforce on a daily level.

Work engagement: A daily perspective

The appearance of work engagement coincides with the rise of positive psychology that has shifted the focus from malfunctioning towards human strengths and optimal functioning (Seligman and Csikszentmihalyi, 2000). Work engagement is a particularly interesting well-being measure in that it can be considered as an *active* measure of well-being instead of a *passive* measure, like job satisfaction that is characterized by satiation. Hence, it is argued by Bakker and Demerouti (2008) that engaged employees are activated towards performing better and behaving positively in the workplace. As such, work engagement is often used as an outcome variable in organizational psychology research. Work engagement is a multidimensional affective-cognitive measure of well-being, and is defined as 'a positive, fulfilling, and work-related state of mind that is characterized by vigor, dedication and absorption' (Schaufeli and Bakker, 2004: 295). Vigor refers to high levels of energy at work and motivation to invest effort into work. Dedication means being strongly involved in work and experiencing feelings of pride and enthusiasm about work. Absorption finally entails immersion in and concentration on work. Absorbed employees feel that time is flying at work (Schaufeli and Bakker, 2004).

Schaufeli et al. (2002) state that engagement is not a momentary and specific state but, rather, it is 'a more persistent and pervasive affective-cognitive state that is not focused on any particular object, event, individual, or behavior' (p. 74). From this perspective, daily fluctuations in work engagement are viewed as error variance, because they are only deviations from what is to be predicted, namely, the baseline level of the employees' level of engagement (Sheldon et al., 1996). However, recently the concept of engagement has

been explored at a weekly (Bakker and Bal, 2010) and daily level as well (e.g. Bakker and Xanthopoulou, 2009; Simbula 2010; Sonnentag, 2003; Tims et al., 2011; Xanthopoulou et al., 2008, 2009a). In contrast to the perspective of Schaufeli et al. (2002), this new line of diary research advocates that employees' engagement is likely to fluctuate over short periods of time; that is, engagement could be considered an experiential state (Sonnentag et al., 2010). In other words, employees are not equally engaged across days. On some days, an employee feels more engaged than on other days (Bakker et al., 2011). Following this lead, Sonnentag et al. (2010) advise against generalizing the concept of engagement and disregarding these daily fluctuations. Instead, they suggest investigating day-specific engagement levels to gain better understanding of how work engagement is related to its antecedents and consequences. This enables researchers to investigate within-person processes. Accordingly, in the present study, we will focus on state work engagement that fluctuates within persons and within days, thereby exploring the experience of work engagement in greater detail. Moreover, Sonnentag et al. (2010) recommend differentiating between the three components of daily work engagement, as it is likely that employees do not experience vigor, dedication, and absorption simultaneously. Therefore, we will look at the three dimensions of work engagement separately.

Work engagement: An individual perspective

Ample research has established the role of work characteristics as main initiators of the process that leads to employee well-being (Bakker and Demerouti, 2007). It has also been suggested that positive individual characteristics are crucial antecedents of employee well-being (Judge et al., 2004, 2005). Indeed, longitudinal research found that individual characteristics, like optimism and self-efficacy, are strong predictors of work engagement (Avey et al., 2010; Xanthopoulou et al., 2009b).

As work engagement is both affective and cognitive in nature (Schaufeli et al., 2002), we selected an affective as well as a cognitive individual predictor of work engagement (i.e. positive emotions and hope, respectively). We believe that positive emotions and hope are not separate but intertwined constructs that together predict daily work engagement. Before we specify the relationships between the constructs, we first define positive emotions and hope. Work-related positive emotions are described as relatively intense affective experiences that are focused on specific objects or situations at work (Gray and Watson, 2001). Hope is defined as a positive cognitive state that is based on a sense of successful goal-directed determination and planning to meet these goals (Snyder et al., 1991). In other words, hope is the motivated persistent pursuit of goals and the expectation that work-related goals can be achieved (Sweetman and Luthans, 2010). In particular, hope as a day-level state can be considered a snapshot of a person's current goal-directed thinking (Snyder et al., 1996). In that sense, daily hope differs from daily self-efficacy in that the latter is focused on feeling capable of overcoming problems and unexpected events (Xanthopoulou et al., 2009a) and handling whatever happens at work (Tims et al., 2011; Xanthopoulou et al., 2008), whereas with the construct of hope, the expectation of attaining current work-related goals is central (Bryant and Cvengros, 2004).

We argue that positive emotions and hope, especially, represent individual characteristics that are expected to initiate employees in being engaged in their work. First, positive emotions could have an effect on both hope and work engagement because they facilitate

approach behavior, which prompts individuals to set goals and to be engaged in attaining these goals and work-related activities (Cacioppo et al., 1999). Subsequently, it is stated that hope, or positive expectancy, enables a person to direct energy in dedicatedly pursuing a goal (i.e. in being engaged) (Gallagher and Lopez, 2009). Finally, like work engagement, positive emotions as well as hope are likely to fluctuate over days because they are state-like constructs, which makes them suitable for studying at a daily level (Fisher, 2002; Snyder et al., 1996). Despite this theoretical reasoning, hope has never been considered as a single predictor of work engagement, neither in survey research nor in diary studies. The predictive role of positive emotions on engagement has not received much attention either, with a few exceptions (Avey et al., 2008; Ouwenel et al., 2011). Therefore, Gallagher and Lopez (2009) and Magaletta and Oliver (1999) state that longitudinal research is needed on establishing hope's predictive value for well-being. All in all, on theoretical grounds, it seems plausible to assume that positive emotions and hope are powerful predictors of day-level work engagement, either directly or indirectly. In the following paragraph, we build upon Broaden-and-Build (B&B) theory (Fredrickson, 1998, 2001) and Affective Events Theory (AET; Weiss and Cropanzano, 1996) to explain how this process may come about.

Building towards engagement

Job resources are expected to be positively related to the occurrence of positive emotional reactions at work (Fisher, 2002). In the research of Herzberg et al. (1959), the specific aspects to which employees reacted with positive emotions were achievement and recognition. Such events are more likely to occur in a resourceful job, with high levels of task significance, autonomy, and feedback. In turn, these events should give rise to momentary positive emotions such as enthusiasm, contentment, enjoyment, and happiness. According to B&B theory (Fredrickson, 1998), positive emotions 'build' personal resources, like hope, which in turn lead to a state of well-being, like engagement. The theory consists of two main hypotheses: the 'broaden hypothesis' and the 'build hypothesis'. That is, positive emotions momentarily 'broaden' people's attention and thinking, enabling them to draw on a wider range of ideas. In turn, these broadened outlooks help employees to discover and build consequential personal resources (Fredrickson, 1998). Employees with these resources are more likely to take advantage of opportunities at work, effectively meet work's challenges and thus, becoming successful and happy at work. Put simply, B&B theory states that positive emotions widen employees' outlooks at work in ways that, step by step, reshape who they are and what they can do (Cohn, 2008). The broaden hypothesis has received a lot of research attention. Experimental studies have shown that the induction of positive emotions widens people's scope of visual attention (Fredrickson and Branigan, 2005; Wadlinger and Isaacowitz, 2006), broadens their repertoires of desired actions (Fredrickson and Branigan, 2005), and increases their openness to new experiences (Kahn and Isen, 1993). The build hypothesis was also confirmed in correlational studies, which have shown that people who experience positive emotions – more than others – show increases over time in, for example, optimism (Fredrickson et al., 2003), proactivity (Fritz and Sonnentag, 2009), and resilience (Cohn et al., 2009). Moreover, the build hypothesis was confirmed in a quasi-experimental study of Fredrickson et al. (2008) in

which the effect of a loving-kindness intervention, using mindfulness meditation, was evaluated in a work setting. Results showed that the intervention caused an increase in daily experiences of positive emotions over time, which built several personal resources (e.g. hope and purpose in life), measured eight weeks later.

It is important to mention that B&B theory was not designed to explain this building process on a daily basis. AET (Weiss and Cropanzano, 1996) provides an explanation on how positive emotions could have an instant effect on employees' cognitions. The theory states that events in the work environment result in emotional reactions of employees and that these reactions have an effect on employees' dispositional levels of affect (e.g. Conway and Briner, 2002). As such, events in the workplace may produce 'affective shocks', which are intense affective experiences. Because these shocks influence the current level of affect of employees, they are in need of further interpretation and reaction at a cognitive level (Grandey et al., 2002). In other words, emotional reactions cause employees to evaluate their work and, in turn, the employees' expectations regarding their working day are influenced (Weiss and Cropanzano, 1996). In this way, the experience of positive emotions may enhance employees' expectations regarding the attainment of work-related goals. So, the experience of positive emotions is likely to influence the level of hope in a positive way and on a daily level. However, to date, studies linking positive emotions to daily work-related hope are non-existent. In conclusion, we assume that positive emotions after work are positively related to hope at the start of the next working day (Hypothesis 1).

Further, B&B theory states that resources ultimately lead to a state of well-being. In this study, we use work engagement as a context-specific (work-related) measure of well-being. As said before, work engagement is active in nature. Therefore, it matches the active nature of B&B theory, which makes work engagement a suitable outcome measure in this theory. There is convincing empirical evidence that personal resources, owing to their motivational potential, are important predictors of work engagement (Bakker and Demerouti, 2008). Positive expectations of employees regarding their capabilities to control and achieve their work-related goals result in more involvement at work. Therefore, these types of resources lead to engagement. Fredrickson et al. (2008) found, for example, that hope as a personal resource enhanced well-being over time. In line with this, Erez and Isen (2002) state that employees who expect to be successful and to achieve work-related goals (i.e. are hopeful) are more likely to experience a state of well-being. It can be assumed that this process is mediated by actual goal attainment. Feldman et al. (2009) established a significant relationship between hope and goal attainment in a longitudinal study among students. Smith et al. (2007) found similar results in a study among athletes (i.e. having autonomous goals leads to actual attainment of these goals). This was caused by higher levels of effort invested by the athletes in attaining these goals. Next, they found that goal attainment resulted in higher levels of psychological well-being. In conclusion, experiencing hope spurs employees to dedicatedly and energetically work towards their goals. That way, employees may get completely absorbed into their work (Sweetman and Luthans, 2010). Thus far, empirical studies have not demonstrated the independent effect of hope on engagement. However, several longitudinal studies have shown that psychological capital (Luthans, 2002), consisting of self-efficacy, optimism, resilience, and hope, was positively related to work engagement among employees (Avey et al., 2010) and students (Ouweneel et al., 2011). On a daily basis, optimism, self-esteem, and self-efficacy

were significantly related to work engagement (Tims et al., 2011; Xanthopoulou et al., 2008, 2009a). In the present study, we focus on the engaging value of another dimension of psychological capital, namely hope, on a daily basis. Based on theorizing, hope at the start of the working day is assumed to be positively related to the three dimensions of work engagement reported after that same working day, namely vigor (Hypothesis 2a), dedication (Hypothesis 2b), and absorption (Hypothesis 2c).

Building at a daily level

The relationship between positive emotions and work engagement, via hope, is also supported by B&B theory (Fredrickson, 1998). Namely, B&B theory posits that positive emotions not only make people feel good at a particular time, but that these positive emotions may predict future well-being as well (Fredrickson and Joiner, 2002). That is, positive emotions produce well-being through building personal resources at a cognitive level. Importantly, as stated before, B&B theory was developed to understand the effect of positive emotions on long-term states of well-being. Fredrickson and Joiner (2002) concluded that it is unlikely that isolated experiences of positive emotions will result in building resources; instead, an accumulation of positive emotions would be necessary in order to actually build resources. This implies that it would take some time to actually get the building process in motion. However, would it also be possible that positive emotions build resources in an instant – as can be concluded based on AET – which would lead to well-being that same day? Possibly, the build hypothesis can be confirmed within one working day.

As mentioned before, some evidence for parts of the build hypothesis have been found in previous daily diary studies. Namely, positive emotions build proactivity (Fritz and Sonnentag, 2009), and resources like optimism and self-efficacy have been found to predict work engagement (Tims et al., 2011; Xanthopoulou et al., 2008, 2009a). Recently, Salanova et al. (2011) showed that positive emotions such as enthusiasm, satisfaction, and comfort predict work and task engagement. In contrast, Fredrickson et al. (2008) found in an experimental study that the direct effect of positive emotions on well-being was non-existent; instead, the relationship between positive emotions and well-being was mediated by resources such as hope. Based on the latter study, it seems plausible to assume that positive emotions lead to work engagement via personal resources, like hope. Thus far, no similar studies have been conducted to test the complete build hypothesis of B&B theory on a daily level. Therefore, in our study we aim to demonstrate the validity of the build hypothesis in this context and explore the relationships between positive emotions and hope, and between hope and work engagement within a daily work setting. In other words, we qualify the relationship between positive emotions and work engagement by adding hope as a mediator. That way, this study will look into *how* positive emotions are related to work engagement on a daily level.

In conclusion, we propose indirect relationships between positive emotions and work engagement; namely, that positive emotions after the working day are indirectly related to the three dimensions of work engagement after the next working day, through the level of hope at the start of the next working day. More specifically, positive emotions are indirectly related to vigor (Hypothesis 3a), dedication (Hypothesis 3b), and absorption (Hypothesis 3c) via hope. We expect that employees use their state of mind after the

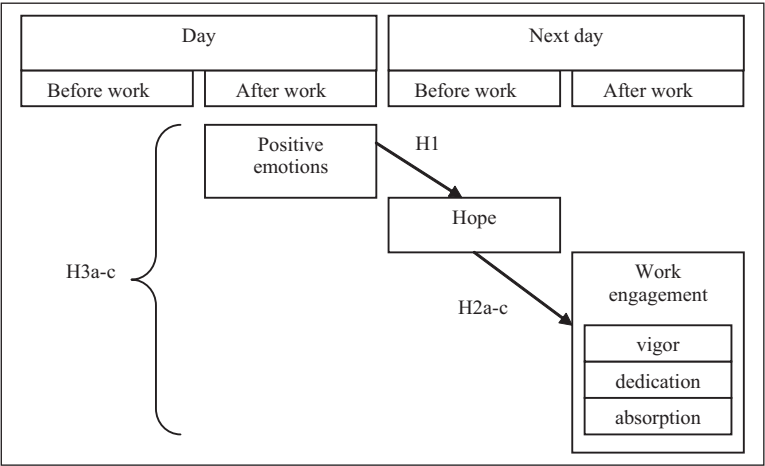


Figure 1 Hypothesized mediation model of daily positive emotions, hope, and work engagement (vigor, dedication, and absorption).
Note: H1 = Hypothesis 1, H2 = Hypothesis 2, H3 = Hypothesis 3.

previous working day as a reference to establish their level of hope at the start of the next working day. Subsequently, we assume that the level of hope at the start of a working day predicts how things will go that day at work, and will therefore directly influence the reported levels of vigor, dedication, and absorption after that same working day. Our hypotheses and study design are depicted in Figure 1.

Method

Participants and procedure

An online questionnaire study was conducted among 113 employees (scientific or administrative staff) of a Dutch university, who were approached by email. After that, the study respondents were asked by email for voluntary participation in a diary study. Out of 113 participants, 52 percent agreed to participate in the diary study as well ($N = 59$ employees). After granting participation, the instructions for the diary procedure were given either face-to-face or by phone, depending on the preferences of the participant. Following Sonnentag (2003), the participants were told that they had to fill out a short questionnaire in a booklet for five consecutive working days (Monday–Friday), twice a day: before work (after waking up), and right after work. Every time participants were supposed to fill in the questionnaire, they received a reminder via email or text message, depending on their own preference. All booklets were given a unique code to enable us to relate the diary results to the questionnaire data. After the diary week, participants were requested to return the diary to the researchers by mail. There were no drop-outs: all diaries were returned. After receiving the completed diaries, participants were rewarded with a 50 Euro (about \$63) voucher of their own choice.

Analyses of variance revealed that the sample of the diary study ($N = 59$) did not significantly differ in demographics and scores on the study variables in comparison to the

sample that only participated in the initial questionnaire study ($N = 54$): age ($F(1,111) = 0.57, p = .45$), gender ($\chi^2(1) = 0.29, p = .59$), job tenure ($F(1,111) = 0.07, p = .80$), education ($F(1,111) = 0.50, p = .48$), positive emotions ($F(1,111) = 0.00, p = 1.00$), hope ($F(1,111) = 1.18, p = .28$), vigor ($F(1,111) = 0.18, p = .67$), dedication ($F(1,111) = 0.06, p = .80$), and absorption ($F(1,111) = 0.23, p = .64$).

The diary sample included 19 men (32.2%) and 40 women (68.8%). Their mean age was 36.6 ($SD = 11.1$). All participants worked full time. They had a mean tenure of 7.4 years, and 88 percent of the participants had a college degree. Of the participants, 10 percent had an administrative job, and 90 percent were scientific staff.

Measures

Questionnaire data. *Baseline positive emotions* were assessed using the positive emotion items of the Job-related Affective Well-being Scale (JAWS; Van Katwyk et al., 2000; shortened by Schaufeli and Van Rhenen, 2006). The seven items were formulated as follows: 'The last couple of weeks, my work made me feel . . . at ease, energetic, happy, enthusiastic, relaxed, inspired, and satisfied'. The participants answered using a five-point Likert scale (1 = [almost] never, 5 = [almost] always). The scale showed good reliability ($\alpha = .89$).

Baseline (work-related) hope was measured using a work-adjusted version of the three-item 'agency' scale of the State Hope Scale (SHS; Snyder et al., 1996) as this is the most relevant and usable dimension in a daily context. We did not include the other dimension of hope, 'pathway', because this implies the presence of problems and obstacles at work, though it is reasonable to assume that these do not occur on a daily basis. A sample item is: 'With regard to my work, I see myself as being pretty successful'. All items were scored on a six-point Likert scale (1 = strongly disagree, 6 = strongly agree). The scale appeared to be reliable ($\alpha = .82$).

Baseline vigor, dedication, and absorption were measured using the three scales of the short version of the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006). The scales consist of three items each. For *vigor*, a sample item is: 'At my work, I feel bursting with energy' ($\alpha = .93$). For *dedication*, a sample item is: 'I am proud of the work that I do' ($\alpha = .90$). Finally, for *absorption*, a sample item is: 'I get carried away when I am working' ($\alpha = .66$). All items were scored on a seven-point Likert scale (0 = never, 6 = always).

Diary data. All daily scales were adjusted versions of the original baseline scales. These adjustments were conducted on the basis of face validity of the items and viability of the study to fit the current daily study design (Rodríguez-Sánchez et al., 2011).

Daily positive emotions were measured after work using a scale that was based on the JAWS (Van Katwyk et al., 2000) and consisted of five items: 'Right now I feel . . . at ease, energetic, happy, enthusiastic, and relaxed'. The average reliability over five days was good ($\alpha = .84$, with a range of .83–.86).

Daily hope was measured with a scale that consisted of two items, derived from the three-item agency scale of the SHS (Snyder et al., 1996), which was adjusted to fit the particular research context. The items were: 'I expect to be successful at work today', and

'I expect to reach the goals that I have set for today'. Day-level hope was assessed by a two item-scale, so instead of a Cronbach's alpha value an inter-item correlation was calculated to establish the internal consistency. The average inter-item correlation over five days was good ($r = .66$, with a range of $.56-.73$).

Daily vigor, dedication, and absorption were assessed with the three scales of a modified version of the UWES (Schaufeli et al., 2006) in order to fit the diary study design. The current scales consisted of two items each. For *vigor* the items were: 'I felt energetic at work today' and 'I felt like going to work today'; for *dedication*: 'I am proud at the things I did at work today', and 'I was inspired by my work today'; and for *absorption*: 'I was completely absorbed in my work today', and 'When I was intensively working today, I felt happy'. The average inter-item correlations over five days were acceptable for all three scales ($r = .53$, with a range of $.49-.57$, $r = .65$, with a range of $.55-.83$, and $r = .66$, with a range of $.55-.76$, respectively). All day-level variables were rated on a seven-point scale (1 = not at all, 7 = to a great extent).

Data analyses

We analyzed our data with a hierarchical linear modeling approach, using MLwiN software (Rashbash et al., 2000). Multilevel models take into account any possible bias in standard errors and estimates resulting from the non-independent data (Kenny et al., 2003). Since our dataset exists of data of multiple measurements ($N = 295$) nested within persons ($N = 59$), multilevel modeling is a well-suited method of analysis. That is, this method offers the opportunity to distinguish the influence of variables on subject level (e.g. characteristics that distinguish between individuals, such as the baseline measurements of hope) from within-subject fluctuations of variables (e.g. do daily levels of positive emotions effect daily levels of hope regardless of the individual baseline and previous levels of hope?) (Sonnenschein et al., 2007). The day-level variables were centered at the person mean and person-level variables were centered at the grand mean, which is the mean of all participants (Ohly et al., 2010). Centering day-level variables at the person mean implies that all between-persons variance in these variables is removed, and all interpretations of our results referring to stable differences between persons can thereby be ruled out (Sonnentag et al., 2008).

Multilevel analyses have often been used to analyze growth models. In these types of studies (e.g. Davila and Sargent, 2003; Kwon and Laurenceau, 2002) a time-model is used as a starting point for multilevel analyses. In the current study, multilevel analyses are used to investigate within-person processes (Papp, 2004) in which within-person associations are examined over time. Therefore, time is included in the analyses as a control variable: in this way, it is possible to control for the fact that the dependent variable varies as a function of the five working days. Moreover, we looked at the possible effect of time as a quadratic effect (e.g. Cranford et al., 2006) and looked at time as a separate factor per day, by composing dummy variables for every day.

In addition to time as a control variable, the baseline level of the outcome measures are included in the models, as well as the previous day's level of the outcome measures. Including baseline levels enables us to investigate the daily fluctuations around the baselines of the employees, which is important because employees' general levels may affect

Table 1 Means and standard deviations of the day level and baseline study variables

	Day level		Baseline	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive emotions	4.92	0.98	3.61	0.65
Hope	5.20	1.14	4.49	0.80
Vigor	5.08	1.07	4.07	1.25
Dedication	4.89	1.37	4.36	1.22
Absorption	4.90	1.34	3.80	1.08

Note: *M* = mean, *SD* = standard deviation

their momentary states (Xanthopoulou et al., 2008). Moreover, adding the previous day's levels in our models allows us to look specifically at daily changes in scores, and is therefore being advised by Sonnentag et al. (2010).

We used the Monte Carlo Method for Assessing Mediation (MCMAM; Selig and Preacher, 2008), using the program of *R* (Venables and Smith, 2010), to test our mediation hypotheses (Hypotheses 3a, 3b, and 3c). The design of this study allows us to examine mediation effects, because all three variables were measured at different successive points in time. The MCMAM was first described and evaluated by MacKinnon et al. (2004). Bauer et al. (2006) used this method for examining mediation in multilevel models. Using the imputed parameter estimates and the associated standard errors, random draws from the *a* and *b* distributions are simulated and the product of these values is computed. This procedure was repeated 20,000 times and the resulting distribution of the *a*b* values is used to estimate a confidence interval around the observed value of *a*b*. That way, we were able to test the null hypotheses that there were no mediation effects in the population. If the null hypothesized value of *a*b* (zero) falls outside the interval, the null hypothesis of no mediation is rejected. In other words, if the confidence interval did not contain the value of zero, mediation is demonstrated (Selig and Preacher, 2008).

Results

Preliminary analyses

Table 1 presents the means, and standard deviations of all study variables. None of the demographic variables (i.e. age, gender, tenure, type of job, and education) appeared to be significantly related to any of the dependent variables. Adding demographics would have made the models unnecessarily complex, and quite importantly, adding these control variables did not significantly change the parameter estimates of the predictor variables. The same applied for the quadratic factor of time, and time as a set of dummy variables for each day. Therefore, demographics as well as the two types of time factor were excluded from further analyses.

To determine the amount of variance that is attributed at either the within-person level or at the between-person level, the within-person variances of daily hope and daily engagement, respectively – which were both used as dependent measures in one our analyses – were

Table 2 Within-person and between-person relationships with standard errors (in brackets) between the daily study variables

	Positive emotions	Hope-lagged	Vigor-lagged	Dedication-lagged	Absorption-lagged
Positive emotions		0.34*** (.11)	0.36*** (.10)	0.30** (.10)	0.31** (.11)
Hope-lagged	0.11** (.04)		0.49*** (.13)	0.46*** (.13)	0.52*** (.16)
Vigor-lagged	0.10* (.05)	0.33*** (.08)		0.49*** (.14)	0.48*** (.15)
Dedication-lagged	0.04 (.06)	0.13 (.08)	0.30*** (.09)		0.45* (.18)
Absorption-lagged	0.05 (.05)	0.15* (.07)	0.31*** (.08)	0.88*** (.14)	

Note: Within-person relationships are depicted below the diagonal, between-person relationships above the diagonal; *** $p < .001$, ** $p < .01$, * $p < .05$.

computed. Results indicated that 49.53 percent of the total variance of day-level hope could be explained within persons. Furthermore, it was found that 42.55 percent of the total variance of day-level vigor, 66.19 percent of the total variance of day-level dedication, and 62.28 percent of the total variance of day-level absorption was explained within persons. Overall, it can be concluded that a substantial portion of the variances in hope and the three dimensions of work engagement can be attributed to within-person variances. In other words, our results show that employees differ greatly from day-to-day in their levels of hope and work engagement.

Using Mplus software (Muthén and Muthén, 2004), we established the within-person and between-person relationships between the study variables, which are depicted in Table 2. The results indicated that the within-person relationships ranged from .04 to .88, and the between-person relationships ranged from .31 to .52.

Furthermore, we conducted multilevel confirmatory factor analyses using Mplus software in order to distinguish between the constructs of positive emotions and work engagement. Indicators of positive emotions were active positive emotions and non-active positive emotions, indicators of work engagement were its three dimensions: vigor, dedication, and absorption. Results showed that the one-factor model did not fit the data ($\chi^2(10) = 93.22, p < .001$; RMSEA = .18; TLI = .67; CFI = .84). The two-factor model, with positive emotions and work engagement as separate factors, fitted the data significantly better than the one-factor model ($\Delta\chi^2(2) = 67.88, p < .001, \Delta AIC = 63.88$). Even though the Chi-square value of the two-factor model was significant ($\chi^2(8) = 25.33, p < .01$), the relative fit indices were meeting the criteria for an acceptable fit (RMSEA = .09; TLI = .91; CFI = .97). Taken together, these results suggest that positive emotions and work engagement are interrelated, yet distinct constructs on a daily level.

Test of hypotheses

To test our hypotheses, we compared three models as regards their fit to the data. First, the *Null Model* was explored, which consisted only of the intercept predicting the dependent variable. Next, in *Model 1* we added time as a control variable as well as the baseline level and previous day's level of the dependent variable. Finally, in *Model 2*, the person-level predictor(s) was/were added. Tables 3, 4, 5, and 6 display information on the model

Table 3 Multilevel estimates for models predicting daily hope at the start of the next working day (Hypothesis 1)

Variable	Null Model			Model 1			Model 2		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	5.22	0.12	44.20***	4.99	0.13	38.42***	5.03	0.13	38.09***
Time (day)				0.16	0.05	3.29***	0.14	0.05	2.86**
Baseline level hope				0.35	0.14	2.50*	0.35	0.14	2.49*
Previous level hope				-0.22	0.08	2.75*	-0.24	0.08	3.00**
Positive emotions (after work)							0.21	0.08	2.79**
-2 × log			606.63			572.23			560.77
Δ -2 × log						34.40***			11.46***
d.f.						3			1
						R ²			R ²
Level 1 within-person variance (SE)	0.64	0.07		0.59	0.07	7.08%	0.56	0.07	11.48%
Level 2 between-person variance (SE)	0.65	0.15		0.57	0.14	12.81%	0.58	0.14	9.88%

Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

fits, estimates of the control and predictor variables, and explained variances of the models.

Table 3 shows the findings from multilevel modeling for positive emotions after work, predicting hope at the start of the next working day (Hypothesis 1). Model 2 ($-2 \times \log = 560.77$), in which positive emotions were added as predictor, showed the best fit to the data because the deviance of the model was significantly lower than the Null Model ($\Delta -2 \times \log = 45.86$, $p < .001$) and than Model 1 ($\Delta -2 \times \log = 11.46$, $p < .001$). Model 2 showed a significant effect of positive emotions on hope ($\gamma = .21$, $SE = .08$, $t = 2.79$, $p < .01$). So, Hypothesis 1 was confirmed. Taken together, the predictor variable and control variables explained 11.48 percent of the variance in hope at the within-person level and 9.88 percent at the between-person level. The explained variance was computed as follows:

$$R^2 = (\sigma^2_{\text{null model}} - \sigma^2_{\text{model 2}}) / \sigma^2_{\text{null model}}$$

Table 4 shows the findings from multilevel modeling for hope, predicting vigor (Hypothesis 2a). Model 2 ($-2 \times \log = 470.39$), in which hope and positive emotions were added as predictors, showed the best fit to the data as the deviance of the model was significantly lower than the Null Model ($\Delta -2 \times \log = 90.23$, $p < .001$) and than Model 1 ($\Delta -2 \times \log = 42.26$, $p < .001$). Model 2 showed a significant effect of hope on vigor

Table 4 Multilevel estimates for models predicting daily vigor after the next working day (Hypothesis 2a)

Variable	Null Model			Model 1			Model 2		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	5.05	0.12	4.28***	4.86	0.12	40.16***	4.87	0.12	41.08***
Time (day)				0.16	0.04	3.72***	0.10	0.04	2.62**
Baseline				0.31	0.08	3.68***	0.31	0.09	3.60**
level vigor									
Previous				−0.07	0.07	−0.97	−0.05	0.07	−0.63
level vigor									
Positive							0.06	0.07	0.98
emotions									
(after work)									
Hope							0.37	0.06	5.81***
(before									
work)									
−2 × log			560.62			512.65			470.39
Δ −2 × log						47.97***			42.26***
d.f.						3			2
						R ²			R ²
Level 1	0.50	0.06		0.45	0.05	11.00%	0.34	0.04	32.40%
within-									
person									
variance (SE)									
Level 2	0.68	0.15		0.52	0.12	23.11%	0.58	0.13	14.81%
between-									
person									
variance (SE)									

Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

($\gamma = .37$, $SE = .06$, $t = 5.81$, $p < .001$). Thus, Hypothesis 2a was confirmed. Taken together, all predictor and control variables explained 32.40 percent of the variance in vigor at the within-person level and 14.81 percent at the between-person level.

Table 5 shows the findings from multilevel modeling for hope, predicting dedication (Hypothesis 2b). Model 2 ($-2 \times \log = 538.71$), in which hope and positive emotions were added as predictors, showed the best fit to the data because the deviance of the model was significantly lower than the Null Model ($\Delta -2 \times \log = 63.17$, $p < .001$) and than Model 1 ($\Delta -2 \times \log = 11.87$, $p < .01$). Model 2 showed a significant effect of hope on dedication ($\gamma = .29$, $SE = .12$, $t = 2.55$, $p < .05$). Thus, Hypothesis 2b was also confirmed. Overall, the predictor variables and control variables explained 8.32 percent of the variance in dedication at the within-person level and 43.06 percent at the between-person level.

Table 6 shows the findings from multilevel modeling for hope, predicting absorption (Hypothesis 2c). Model 2 ($-2 \times \log = 634.16$), in which hope and positive emotions were added as predictors, showed the best fit to the data because the deviance of the model was significantly lower than the Null Model ($\Delta -2 \times \log = 58.04$, $p < .001$) and than Model 1

Table 5 Multilevel estimates for models predicting daily dedication after the next working day (Hypothesis 2b)

Variable	Null Model			Model 1			Model 2		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	4.88	0.13	37.80***	4.64	0.15	31.54***	4.70	0.15	31.53***
Time (day)				0.18	0.07	2.54*	0.13	0.07	1.84
Baseline level dedication				0.42	0.09	4.82***	0.42	0.09	4.69***
Previous level dedication				-0.15	0.08	1.83	-0.17	0.09	1.91
Positive emotions (after work)							0.05	0.12	0.42
Hope (before work)							0.29	0.12	2.55*
-2 × log d.f.			714.32			663.02			651.15
Δ -2 × log d.f.						51.30***			11.87**
						3			2
						R ²			R ²
Level 1 within-person variance (SE)	1.26	0.14		1.21	0.14	3.88%	1.16	0.14	8.32%
Level 2 between-person variance (SE)	0.63	0.19		0.33	0.13	48.00%	0.36	0.13	43.06%

Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

($\Delta -2 \times \log = 15.33$, $p < .001$). Model 2 showed a significant effect of hope on absorption ($\gamma = .28$, $SE = .11$, $t = 2.60$, $p < .01$). Thus, Hypothesis 2c was confirmed as well. Taken together, all predictor variables and control variables explained 6.56 percent of the variance in absorption at the within-person level and 39.17 percent at the between-person level.

In order to test our hypotheses, we constructed four separate models on partly the same data. However, in the case of more than one statistical model, the chance of finding at least one statistically significant result owing to chance fluctuation in the total study, and to incorrectly declare a relationship to be true (Type I error), increases. For that reason, the alpha level should be adjusted downward to taken chance capitalization into account. Considering this, we performed the Holm-Bonferroni correction (Holm, 1979) on our results. Following Holm (1979), we started by ordering the p -values of the four effects

Table 6 Multilevel estimates for models predicting daily absorption after the next working day (Hypothesis 2c)

Variable	Null Model			Model 1			Model 2		
	Estimate	SE	t	Estimate	SE	t	Estimate	SE	t
Intercept	4.91	0.13	37.78***	4.78	0.14	33.18***	4.83	0.15	33.11***
Time (day)				0.09	0.07	1.32	0.04	0.07	0.64
Baseline level absorption				0.48	0.10	4.82***	0.47	0.10	4.65***
Previous level absorption				−0.14	0.08	1.63	−0.17	0.09	1.86
Positive emotions (after work)							0.12	0.12	0.99
Hope (before work)							0.28	0.11	2.60**
−2 × log Δ			692.20			649.49			634.16
−2 × log d.f.						42.71***			15.33***
						3			2
						R ²			R ²
Level 1 within-person variance (SE)	1.11	0.13		1.12	0.13	0%	1.04	0.12	6.56%
Level 2 between-person variance (SE)	0.67	0.19		0.37	0.13	44.81%	0.41	0.14	39.17%

Note: *** $p < .001$, ** $p < .01$, * $p < .05$.

from small to large: the effect of hope on vigor was the strongest and had the smallest p -value ($p = .000$), then the effect of positive emotions on hope ($p = .005$), then the effect of hope on absorption ($p = .009$), and finally the effect of hope on dedication ($p = .011$), which had the largest p -value. After that, we compared the p -values to their according criterion p -values: the smallest p -value to $\alpha/4 = .013$, the second smallest p -value to $\alpha/3 = .017$, the third smallest p -value to $\alpha/2 = .025$, and the largest p -value to $\alpha/1 = .05$. The results revealed that we were able to maintain all four effects, since the according p -values were smaller than the criterion p -values of the correction procedure.

Finally, Hypotheses 3a, 3b, and 3c stated that positive emotions are indirectly related to vigor, dedication, and absorption, via hope. To test these three mediation hypotheses,

Table 7 Direct and indirect effects of positive emotions on vigor, dedication, or absorption, via hope, using MCMAM (Hypotheses 3a, 3b, and 3c)

Model	a (SE)	b (SE)	a*b	Lower bound	Upper bound	c' (SE)	c
Positive emotions→hope→vigor	.21(.09)	.37(.06)	.08	.0134	.1495	.06(.07)	.14
Positive emotions→hope→dedication	.21(.09)	.29(.12)	.06	.0053	.1462	.05(.12)	.11
Positive emotions→hope→absorption	.21(.09)	.28(.11)	.06	.0072	.1426	.12(.12)	.17

Note: SE = standard error; the estimates depicted in this table are based on Model 2 of Table 3, 4, 5, and 6. a = regression coefficient for the association between the positive emotions and hope; b = regression coefficient for the association between hope and vigor, dedication, or absorption, when positive emotions is also a predictor of vigor, dedication, or absorption; c' = regression coefficient for the association between positive emotions and vigor, dedication, or absorption (direct effect); a*b = regression coefficient for the indirect association between positive emotions and vigor, dedication, or absorption, via hope (indirect effect); and c = sum of a*b and c' (total effect).

MCMAM (Selig and Preacher, 2008) was performed using the program of *R* (Venables and Smith, 2010). As stated before, MCMAM is a repeated simulation of $a*b$ and the assumption is that in the case of no mediation effect, $a*b$ would be zero. The simulation method drew from the $a*b$ distribution, and mediation should be accepted if the 95 percent confidence interval does not contain zero. The results showed that all three hypotheses are confirmed, since all three confidence intervals did not contain zero. The indirect effect of positive emotions on vigor, via hope was .08 (Hypothesis 3a), on dedication .06 (Hypothesis 3b), and on absorption also .06 (Hypothesis 3c). The confidence intervals and parameter estimates of the three mediation tests are depicted in Table 7.

Conclusion and discussion

Our diary study was conducted with the objective of investigating the potential positive *within-person* relationships between positive emotions, work-related hope, and the three dimensions of work engagement, vigor, dedication, and absorption, on a daily level. Indirect relationships of positive emotions on the three engagement dimensions via hope have indeed been uncovered. More specifically, we found that positive emotions felt after a working day predicted how hopeful the participating employees were regarding their work at the start of the next working day (Hypothesis 1). Furthermore, the level of hope appeared to have an effect on the level of vigor (Hypothesis 2a), dedication (Hypothesis 2b), and absorption (Hypothesis 2c) that the participants reported after that same working day. In conclusion, on a daily level, the experience of positive emotions has an indirect effect on the dimensions of work engagement through hope (Hypotheses 3a–c).

Interpretation of results

Participants use their daily emotional states at the end of the previous working day to establish their levels of hope regarding the working day that lies ahead. Based on B&B theory, this can be explained by the fact that positive emotions broaden employees' thinking, enabling them to draw on a wider range of ideas. In turn, these broadened outlooks

help employees to build consequential personal resources, like hope. Moreover, a possible explanation lies in the fact that emotional reactions cause employees to evaluate their work and, as such, they change their expectations regarding their following working day accordingly. Positive emotions may cause employees to expect that they will attain the goals that they have set for themselves. So, the experience of positive emotions is likely to positively influence the level of hope.

In addition, the type of expectancies participants start their working day with do matter, since the current study showed that hope at the start of the working day is an important predictor of feelings of vigor, dedication, and absorption after that same working day. The reason why employees who start the day expecting to reach their own goals are more engaged could be that hope leads to higher levels of effort and actual goal attainment, which in turn is associated with psychological well-being (Feldman et al., 2009; Smith et al., 2007). Thus, experiencing hope motivates employees to dedicatedly and energetically work towards their goals. In this way, employees are completely absorbed into their work.

So, the findings of the current study are in line with B&B theory (Fredrickson, 1998) and AET (Weiss and Cropanzano, 1996) in that we indeed found that the experience of positive emotions builds hope over time – either through a broadened mindset (Fredrickson and Branigan, 2005) or by cognitively evaluating the experienced positive emotions (Weiss and Cropanzano, 1996) – which, in turn, is related to work engagement. In conclusion, positive emotions and hope – as a personal resource – seem to predict vigor, dedication, and absorption at work, either indirectly or directly.

Our study has indicated that work engagement is a suitable work-related well-being measure to use in the context of testing B&B theory at work. Work engagement is an active form of well-being and is closely related to experiences at work and therefore predicted by positive emotions as well as work-related personal resources such as hope. Furthermore, our study has shown that, next to positive emotions, hope and the dimensions of work engagement are constructs that can be successfully studied within a daily context. Although some authors have suggested that the study variables at hand are of a dispositional nature (hope: Snyder, 2002; affect: Watson et al., 1999) or represent a more durable state level (work engagement: Seppälä et al., 2009), we showed that employee's scores on these constructs not only vary across a relative short time period (i.e. working days), but they are also related to one another in predictable ways. Although it is generally accepted that average levels of well-being are at least partly genetically determined (Lykken, 1999), our results convincingly show that daily fluctuations around this set-point do occur. This daily perspective was also shown to be relevant in previous studies on work engagement (e.g. Sonnentag, 2003; Sonnentag et al., 2008; Tims et al., 2011; Xanthopoulou et al., 2008, 2009a). In addition, it seems a worthwhile endeavour to distinguish between the three dimensions of work engagement, at least on a daily level. Although this has never been done before, except for a few studies in which only vigor was used as a separate outcome measure on a daily level (Cranford et al., 2006; Sonnentag and Niessen, 2008), this study shows that dedication and absorption, especially, fluctuate greatly within persons (see Preliminary analyses). Actually, the results indicated that vigor especially could be explained by differences at a personal level (i.e. levels of positive emotions and hope).

Next to a daily perspective on work engagement, an individual perspective on work engagement seems promising as well, in the sense that individual antecedents like positive emotions and hope seem to predict engagement. Positive emotions are affective in nature

(Gray and Watson, 2001), hope is cognitive in nature (Snyder, 2002), and engagement is defined as an affective-cognitive state of mind (Schaufeli and Bakker, 2004), hence combining both perspectives. The current study confirmed that affect and cognition are closely related to one another with regard to employee well-being. This close relationship was found in earlier longitudinal studies among employees (Avey et al., 2008; Fredrickson et al., 2008) as well as among students (Ouweneel et al., 2011).

In this study we controlled for several variables. First of all, we looked at the effect of time in three ways; time as a set of dummy variables to investigate the effects per working day separately, the quadratic effect of time to check for curvilinear patterns of the outcome variables, and finally, the linear effect of time to control for the fact that the outcome variables vary as a function of the five working days. The results indicated that time as a set of dummies and as a quadratic effect did not have significant effects on the results. This is in contrast with the findings of Cranford et al. (2006) who found that vigor – one of the dimensions of engagement – had a curvilinear effect throughout the week. It is likely that this is caused by the fact that Cranford et al. (2006) included weekends in their analyses, since in the weekends the reports on vigor were higher than during the week. So, in our analyses we only controlled for the linear effect of time. This is not common in diary studies in the field of organizational psychology. However, our results show that it is advisable to include time in multilevel analyses. Next to time, we controlled for the previous day's and baseline levels of the outcome variables. Results indicated that the baseline levels of the outcome variables were important predictors of the daily levels of the variables. On the contrary, the previous day's levels did not have a significant effect on the outcome variables, with the exception of hope. In fact, it is shown that the relationships between the study variables were stronger when controlling for previous and baseline levels of the outcome variable. For example, the within-subject relationship between positive emotions and absorption is not significant (.05 – see Table 2), whereas Table 7 shows that the relationship between positive emotions and absorption is much stronger when controlling for previous and baseline levels of absorption (.12). Apparently, positive emotions are stronger predictors of change in absorption than of absolute levels of absorption. So, incorporating baseline and previous levels of the outcome variable appeared to be of great theoretical relevance. In addition, Table 2 also shows that there are clear differences in within- and between-person relationships between the study variables. Whereas all between-person relationships were significant, the within-person relationships were not. For example, positive emotions are not related to next days' dedication and absorption at a within-person level. Although positive emotions and dedication and absorption are related to each other at the between-person level, over time, within a person, positive emotions are not related to these dimensions of daily work engagement. These results show that it is important to distinguish between within- and between-person relationships when conducting multilevel analyses on longitudinal data.

Strengths and limitations

The current diary study had a within-subject design with two measures per day (as advocated by Sonnentag et al., 2010) for five consecutive working days. To date, mostly between-subject, long-term questionnaire studies on work engagement have been conducted, with a small number of exceptions (e.g. Bakker and Xanthopoulou, 2009; Sonnentag,

2003; Tims et al., 2011; Xanthopoulou et al., 2008, 2009a). The advantage of diary studies over questionnaire studies with multiple waves is that it is more trustworthy to draw causal conclusions. That is, owing to the small time lags between the time measurements, there is less chance of contextual variables interfering with the results. In addition, there is a vast reduction in the likelihood of (false) retrospection – referred to as the *retrospection bias* (Bolger et al., 2003) – achieved by minimizing the amount of time elapsed between a certain experience and the account of this experience. In this way, participants hardly needed to remember or cognitively integrate their past experiences. Put differently, an essential benefit of diary methods is that they permit the examination of reported events and experiences in their natural habitat, providing valid and reliable information about the affective and cognitive well-being of employees, complementary to that obtained by more traditional questionnaire designs (Bolger et al., 2003). In addition, Sonnentag (2001) states that the time points of the daily measurements matter as well; she measured work-related well-being late at night and labelled that as a limitation of her study. Accordingly, not only by using brief time lags between the measurements but also by using the appropriate time points during the day for our assessments (i.e. hope right before work and engagement right after work), we obtained very accurate information on the study variables at suitable time points. Finally, in this study we were able to make a strong case for mediation since the variables were measured at three successive points in time, and we used a resampling method to test our mediation hypotheses.

Despite these strengths of our design, our study had some limitations as well. For example, we exclusively used self-report measures to assess positive emotions, hope, and work engagement so that – at least potentially – the study results might have been inflated by common method variance. However, because of their affective and cognitive nature, it is difficult to see in what other way our study variables could have been measured. Furthermore, the diary items were formulated following the criteria of Experience Sampling Method (Csikszentmihalyi and Larson, 1987) to make the subjective measurements as ‘objective’ as possible. First, we wrote the diary items in the first person to initialize the participants’ internal dialogue. This dialogue was further stimulated by using statements instead of questions and by formulating the items in everyday speech. Nonetheless, using additional, more objective measures like customer, subordinate, or supervisor ratings, and financial performance would be of added value in future research. Although Zwetsloot and Pot (2004) state that enhancing employee well-being should be an objective of practitioners and management in itself, the link with performance would obviously be relevant for organizations.

Furthermore, certain parts of the investigated processes stay unidentified. First, the origins of positive emotions are unknown. As stated in the Introduction section, it is likely that achievement and recognition are the most common incidents to which employees react with positive emotions (Herzberg et al., 1959). No matter the origin of positive emotions, we found that positive emotions after the working day were related to hope the following morning, thereby confirming the build hypothesis at a daily basis. Additionally, we theorized in the Introduction section on how positive emotions after work could lead to next mornings’ hope. However, since we did not look into what happens between the two working days in the evening, other explanations for the relationship between positive emotions after work and hope the following morning are possible. For example, it could be that the experience of positive emotions first leads to more creative thinking and exploratory behavior in the evening (Fredrickson, 2001), which, in turn, builds hope.

It would therefore be interesting to include evening measurements on creative thinking and proactive behaviour into future diary studies. Moreover, it could be that positive emotions at night first lead to a better recovery before sleep, which in turn leads to more hope about work the next day (see Sonnentag, 2003). Yet, another possibility is that positive emotions after work predict behavior such as active leisure activities (e.g. social, physical activities), where resources lost during the day are replenished during the evening, which leads to more hope the following morning. Indeed, Sonnentag et al. (2008) found that positive experiences in the evening affect next morning's state of mind, so more insight in activities in the evening would be advisable in future diary studies as well. That way, it would be possible to better uncover *how* daily positive emotions build resources. Finally, next to hope, other variables could have played a role in predicting the levels of vigor, dedication, and absorption. For example, job resources (Xanthopoulou et al., 2008, 2009a) have been found to be related to work engagement on a daily level. Therefore, as stated before, future research should combine environmental and personal antecedents of engagement and establish their effects on vigor, dedication, and absorption.

In this study, because of methodological reasons, only the agency dimension of hope was included. Although previous research has shown that this dimension of hope has the most important predictive value for well-being (Bailey et al., 2007), and is the strongest predictor of actual goal attainment (Feldman et al., 2009), future diary studies could incorporate the scale as a whole. Note, however, that the study should then be conducted in a sample of employees who encounter obstacles on a daily basis; for example, receptionists who work at complaints desks.

In line with B&B theory, the current study specifically focused on the indirect effect of positive emotions on engagement via a personal resource. However, it could also be interesting to see whether negative emotions have a direct effect on burn-out (antipode of work engagement; Maslach et al., 2001), or whether they are also indirectly influencing (un)well-being through negative cognitive beliefs like pessimism (Colligan et al., 1994), negative perfectionism (Zhang et al., 2007), or an external locus of control at work (Ng et al., 2006).

Implications

Work engagement is an essential component of employee well-being and has been shown to have considerable impact on organizational outcomes. Hence, it is crucial to answer the question of how work engagement can be boosted among employees (Salanova et al., 2010). Several studies have provided evidence on the effectiveness of workplace interventions that aim to increase engagement by means of increasing job resources (e.g. Cifre et al., 2011). In addition, an individual perspective on work engagements has now emerged, which contains relevant information for the development of *individual* interventions that enhance and maintain work engagement. Our study has shown that daily positive emotions build daily positive expectancies (i.e. hope), which relates to daily experiences of vigor, dedication, and absorption at work. Positive emotions as well as hope are state-like constructs that can be influenced (Luthans, 2002). Indeed, there are already interventions at hand that enhance the experience of positive emotions and hopeful beliefs. For example, positive emotions can be positively influenced through a mindfulness meditation

intervention (Fredrickson et al., 2008) or by expressing gratitude and visualizing positive self images (Sheldon and Lyubomirsky, 2006). In addition, hope has been found to be stimulated by a goal setting intervention in which personal goals were determined and multiple pathways to these goals were generated (Luthans et al., 2006). In conclusion, work engagement is a promising construct to explore using an individual perspective along with a daily perspective. The combination of these two perspectives on work engagement yields interesting knowledge for both research and practice. Moreover, future studies should explore the different antecedents and consequences of the three dimensions of daily work engagement separately.

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References

- Avey JB, Luthans F, Smith RM and Palmer NF (2010) Impact of positive psychological capital on employee well-being over time. *Journal of Occupational Health Psychology* 15(1): 17–28.
- Avey JB, Wernsing TS and Luthans F (2008) Can positive employees help positive organizational change? Impact of psychological capital and emotions on relevant attitudes and behaviors. *Journal of Applied Behavioral Science* 44(1): 48–70.
- Bailey TC, Eng W, Frisch MB and Snyder CR (2007) Hope and optimism related to life satisfaction. *Journal of Positive Psychology* 2(3): 168–175.
- Bakker AB and Bal PM (2010) Weekly work engagement and performance: A study among starting teachers. *Journal of Occupational and Organizational Psychology* 83(1): 189–206.
- Bakker AB and Demerouti E (2007) The job demands-resources model: State of the art. *Journal of Managerial Psychology* 22(3): 309–328.
- Bakker AB and Demerouti E (2008) Towards a model of work engagement. *Career Development International* 13(3): 209–223.
- Bakker AB and Xanthopoulou D (2009) The crossover of daily work engagement: Test of an actor-partner interdependence model. *Journal of Applied Psychology* 94(6): 1562–1571.
- Bakker AB, Albrecht SL and Leiter MP (2011) Key questions regarding work engagement. *European Journal of Work and Organizational Psychology* 20(1): 4–28.
- Bauer DJ, Preacher KJ and Gil KM (2006) Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: New procedures and recommendations. *Psychological Methods* 11(2): 142–163.
- Bolger N, Davis A and Rafaeli E (2003) Diary methods: Capturing life as it is lived. *Annual Review of Psychology* 54(1): 579–616.
- Bryant FB and Cvengros JA (2004) Distinguishing hope and optimism: Two sides of a coin, or two separate coins? *Journal of Social and Clinical Psychology* 23(2): 273–302.
- Cacioppo JT, Gardner WL and Berntson GG (1999) The affect system has parallel and integrative processing components: Form follows function. *Journal of Personality and Social Psychology* 76(5): 839–855.
- Cifre E, Salanova M and Rodríguez-Sánchez AM (2011) Dancing between theory and practice: Enhancing work engagement through work stress intervention. *Human Factors and Ergonomics in Manufacturing and Service Industries* 21(3): 269–286.
- Cohn MA (2008) Positive emotions: Short-term mechanisms, long-term outcomes, and mediating processes. Unpublished PhD dissertation, Michigan University.

- Cohn MA, Fredrickson BL, Brown SL, Mikels JA and Conway A (2009) Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion* 9(3): 361–368.
- Colligan RC, Offord KP, Malinchoc M, Schulman P and Seligman MEP (1994) CAVEing the MMPI for an optimism-pessimism scale: Seligman's attributional model and the assessment of explanatory style. *Journal of Clinical Psychology* 50(1): 71–95.
- Conway N and Briner RB (2002) A daily diary study of affective responses to psychological contract breach and exceeded promises. *Journal of Organizational Behavior* 23(3): 287–302.
- Cranford JA, Shrout PE, Iida M, Rafaeli E, Yip T and Bolger N (2006) A procedure for evaluating sensitivity to within-person change: Can mood measures in diary studies detect change reliably? *Personality and Social Psychology Bulletin* 32(7): 917–929.
- Csikszentmihalyi M and Larson R (1987) Validity and reliability of the Experience-Sampling Method. *The Journal of Nervous and Mental Disease* 175(9): 526–536.
- Davila J and Sargent E (2003) The meaning of life (events) predicts changes in attachment security. *Personality and Social Psychology Bulletin* 29(11): 1383–1395.
- Erez A and Isen AM (2002) The influence of positive affect on the components of expectancy motivation. *Journal of Applied Psychology* 87(6): 1055–1067.
- Feldman DB, Rand KL and Kahle-Wobreski K (2009) Hope and goal attainment: Testing a basic prediction of hope theory. *Journal of Social and Clinical Psychology* 28(4): 479–497.
- Fisher CD (2002) Antecedents and consequences of real-time affective reactions at work. *Emotion and Motivation* 26(1): 3–30.
- Fredrickson BL (1998) What good are positive emotions? *Review of General Psychology* 2(3): 300–319.
- Fredrickson BL (2001) The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist* 56(3): 218–226.
- Fredrickson BL and Branigan C (2005) Positive emotions broaden thought-action repertoires: Evidence for the broaden-and-build model. *Cognition and Emotion* 19(3): 313–332.
- Fredrickson BL and Joiner T (2002) Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science* 13(2): 172–175.
- Fredrickson BL, Cohn MA, Coffey KA, Pek J and Finkel SM (2008) Open hearts build lives: Positive emotions, induced through loving-kindness meditation, build consequential personal resources. *Journal of Personality and Social Psychology* 95(5): 1045–1062.
- Fredrickson BL, Tugade MM, Waugh CE and Larkin G (2003) What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology* 84(2): 365–376.
- Fritz C and Sonnentag S (2009) Antecedents of day-level proactive behavior: A look at job stressors and positive affect experienced during the workday. *Journal of Management* 35(1): 94–111.
- Gallagher MW and Lopez SJ (2009) Positive expectancies and mental health: Identifying the unique contributions of hope and optimism. *Journal of Positive Psychology* 4(6): 548–556.
- Grandey A, Tam A and Brauburger A (2002) Affective states and traits of young workers: A diary study. *Motivation and Emotion* 26(1): 31–55.
- Gray E and Watson D (2001) Emotion, mood, temperament: Similarities, differences and a synthesis. In: Payne RL and Cooper CL (eds) *Emotions at Work: Theory, Research and Applications for Management*. Chichester: Wiley, 21–44.
- Hakanen J, Schaufeli WB and Ahola K (2008) The Job Demands-Resources model: A three-year cross-lagged study of burnout, depression, commitment, and work engagement. *Work and Stress* 22(3): 224–241.
- Herzberg F, Mausner B and Snyderman BB (1959) *The Motivation to Work*. New York: Wiley.
- Holm S (1979) A simple sequentially rejective multiple test procedure. *Scandinavian Journal of Statistics* 6(2): 65–70.

- Judge TA, Bono JE, Erez A and Locke EA (2005) Core self-evaluations and job and life satisfaction: The role of self-concordance and goal attainment. *Journal of Applied Psychology* 90(2): 257–268.
- Judge TA, Van Vianen AEM and De Pater I (2004) Emotional stability, core self-evaluations, and job outcomes: A review of the evidence and an agenda for future research. *Human Performance* 17(3): 325–346.
- Kahn BE and Isen AM (1993) The influence of positive affect on variety seeking among safe, enjoyable products. *Journal of Consumer Research* 20(2): 257–270.
- Kenny DA, Korchmaros JD and Bolger N (2003) Lower level mediation in multilevel models. *Psychological Methods* 8(2): 115–128.
- Kwon P and Laurenceau JP (2002) A longitudinal study of the hopelessness theory of depression: Testing the diathesis-stress model within a differential reactivity and exposure framework. *Journal of Clinical Psychology* 58(10): 1305–1321.
- Luthans F (2002) The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior* 23(6): 695–706.
- Luthans F, Avey JB, Avolio BJ, Norman SM and Combs GM (2006) Psychological capital development: Towards a micro-intervention. *Journal of Organizational Behavior* 27(3): 387–393.
- Lykken D (1999) *Happiness: The Nature and Nurture of Joy and Contentment*. New York: St. Martin's Griffin.
- MacKinnon DP, Lockwood CM and Williams J (2004) Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research* 39(1): 99–128.
- Magaletta PR and Oliver JM (1999) The hope construct, will, and ways: Their relative relations with self-efficacy, optimism, and general well-being. *Journal of Clinical Psychology* 55(5): 539–551.
- Maslach C, Schaufeli WB and Leiter MP (2001) Job burnout. *Annual Review of Psychology* 52(1): 397–422.
- Muthén LK and Muthén BO (2004) *Mplus User's Guide*, 3rd edn. Los Angeles, CA: Muthén and Muthén.
- Ng TWH, Sorensen KL and Eby LT (2006) Locus of control at work: A meta-analysis. *Journal of Organizational Behavior* 27(8): 1057–1087.
- Ohly S, Sonnentag S, Niessen C and Zapf D (2010) Diary studies in organizational research: An introduction and some practical recommendations. *Journal of Personnel Psychology* 9(2): 79–93.
- Ouweneel APE, Le Blanc PM and Schaufeli WB (2011) Flourishing students: A longitudinal study on positive emotions, personal resources, and study engagement. *Journal of Positive Psychology* 6(2): 142–153.
- Papp L (2004) Capturing the interplay among within- and between-person processes using multilevel modeling techniques. *Applied and Preventive Psychology* 11(2): 115–124.
- Rashbash J, Browne W, Healy M, Cameron B and Charlton C (2000) *MLwiN (Version 1.10.006): Interactive Software for Multilevel Analysis*. London: Multilevel Models Project, Institute of Education, University of London.
- Rodríguez-Sánchez AM, Schaufeli WB, Salanova M, Sonnenschein M and Cifre E (2011) An electronic diary study on daily flow patterns. *Work and Stress* 25(1): 75–92.
- Salanova M, Llorens S and Schaufeli WB (2011) Yes, I can, I feel good, and I just do it! On gain cycles and spirals of efficacy beliefs, affect, and engagement. *Applied Psychology: An International Review* 60(2): 255–285.
- Salanova M, Schaufeli WB, Xanthopoulou D and Bakker AB (2010) Gain spirals of resources and work engagement. In: Bakker AB and Leiter MP (eds) *Work Engagement: A Handbook of Essential Theory and Research*. New York: Psychology Press, 118–131.
- Schaufeli WB and Bakker AB (2004) Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior* 25(3): 293–315.

- Schaufeli WB and Van Rhenen W (2006) Over de rol van positieve en negatieve emoties bij het welbevinden van managers: Een studie met de Job-related Affective Well-being Scale (JAWS). [About the role of positive and negative emotions in managers' well-being: A study using the Job-related Affective Well-being Scale (JAWS).] *Gedrag & Organisatie* 19(4): 223–244.
- Schaufeli WB, Bakker AB and Salanova M (2006) The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement* 66(4): 701–716.
- Schaufeli WB, Salanova M, González-Romá V and Bakker AB (2002) The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies* 3(1): 71–92.
- Selig JP and Preacher KJ (2008) Monte Carlo method for assessing mediation: An interactive tool for creating confidence intervals for indirect effects [Computer software]. Available at: <http://quantpsy.org/>.
- Seligman MEP and Csikszentmihalyi M (2000) Positive psychology: An introduction. *American Psychologist* 55(1): 5–14.
- Seppälä P, Mauno S, Feldt T, Hakanen J, Kinnunen U, Tolvanen A and Schaufeli WB (2009) The construct validity of the Utrecht Work Engagement Scale: Multisample and longitudinal evidence. *Journal of Happiness Studies* 10(4): 459–481.
- Sheldon KM and Lyubomirsky S (2006) How to increase and sustain positive emotion: The effect of expressing gratitude and visualizing best possible selves. *Journal of Positive Psychology* 1(2): 73–82.
- Sheldon KM, Ryan R and Reis HT (1996) What makes for a good day? Competence and autonomy in the day and in the person. *Personality and Social Psychology Bulletin* 22(12): 1270–1279.
- Simbula S (2010) Daily fluctuations in teachers' well-being: A diary study using the job demands-resources model. *Anxiety, Stress and Coping* 23(5): 563–584.
- Smith A, Ntoumanis N and Duda J (2007) Goal striving, goal attainment, and well-being: Adapting and testing the self-concordance model in sport. *Journal of Sport and Exercise Psychology* 29(6): 763–782.
- Snyder CR (2002) Hope theory: Rainbows in the mind. *Psychological Inquiry* 13(4): 249–275.
- Snyder CR, Irving LM and Anderson JR (1991) Hope and health. In: Snyder CR (ed.) *Handbook of Social and Clinical Psychology*. Oxford: Oxford University Press, 295–305.
- Snyder CR, Simpson SC, Ybasco FC, Borders TF, Babyak MA and Higgins RL (1996) Development and validation of the state hope scale. *Journal of Personality and Social Psychology* 70(2): 321–335.
- Sonnenschein M, Sorbi MJ, Van Doornen LPJ, Schaufeli WB and Maas CJM (2007) Evidence that impaired sleep recovery may complicate burnout improvement independent of depression. *Journal of Psychosomatic Research* 62(4): 487–494.
- Sonnentag S (2001) Work, recovery activities, and individual well-being: A diary study. *Journal of Occupational Health Psychology* 3(3): 196–210.
- Sonnentag S (2003) Recovery, work engagement, and proactive behavior: A new look at the interface between nonwork and work. *Journal of Applied Psychology* 88(3): 518–528.
- Sonnentag S and Niessen C (2008) Staying vigorous until work is over: The role of trait vigour, day-specific work experiences, and recovery. *Journal of Occupational and Organizational Psychology* 81(3): 435–458.
- Sonnentag S, Binnewies C and Mojza EJ (2008) Did you have a nice evening? A day-level study on recovery experiences, sleep, and emotions. *Journal of Applied Psychology* 93(3): 674–684.
- Sonnentag S, Dormann C and Demerouti E (2010) Not all days are created equal: The concept of state work engagement. In: Bakker AB and Leiter MP (eds) *Work Engagement: A Handbook of Essential Theory and Research*. New York: Psychology Press, 25–38.

- Sweetman D and Luthans F (2010) The power of positive psychology: Psychological capital and work engagement. In: Bakker AB and Leiter MP (eds) *Work Engagement: A Handbook of Essential Theory and Research*. New York: Psychology Press, 54–68.
- Tims M, Bakker AB and Xanthopoulou D (2011) Do transformational leaders enhance their followers' daily work engagement? *The Leadership Quarterly* 22(1): 121–131.
- Van Katwyk PT, Fox S, Spector PE and Kelloway EK (2000) Using the Job-related Affective Well-being Scale (JAWS) to investigate affective responses to work stressors. *Journal of Occupational Health Psychology* 5(2): 219–230.
- Venables WN and Smith DM (2010) *An introduction to R: A Programming Environment for Data Analysis and Graphics* (Version 2.12.1). R Development Core Team.
- Wadlinger HA and Isaacowitz DM (2006) Positive mood broadens visual attention to positive stimuli. *Motivation and Emotion* 30(1): 89–101.
- Watson D, Wiese D, Vaidya J and Tellegen A (1999) The two general activation systems of affect: Structural findings, evolutionary considerations, and psychobiological evidence. *Journal of Personality and Social Psychology* 76(5): 820–838.
- Weehuizen R (2008) Mental capital: The economic significance of mental health. Unpublished PhD Dissertation. Maastricht: Universiteit van Maastricht.
- Weiss HM and Cropanzano R (1996) Affective events theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In: Staw BM and Cummings LL (eds) *Research in Organizational Behavior*. Greenwich, CT: JAI Press, 1–74.
- Xanthopoulou D, Bakker AB, Demerouti E and Schaufeli WB (2009a) Work engagement and financial returns: A diary study on the role of job and personal resources. *Journal of Occupational and Organizational Psychology* 82(1): 183–200.
- Xanthopoulou D, Bakker AB, Demerouti E and Schaufeli WB (2009b) Reciprocal relationships between job resources, personal resources and work engagement. *Journal of Vocational Behavior* 74(3): 235–244.
- Xanthopoulou D, Bakker AB, Heuven E, Demerouti E and Schaufeli WB (2008) Working in the sky: A diary study on work engagement among flight attendants. *Journal of Occupational Health Psychology* 13(4): 345–356.
- Zhang Y, Gan Y and Cham H (2007) Perfectionism, academic burnout and engagement among Chinese college students: A structural equation modeling analysis. *Personality and Individual Differences* 43(6): 1529–1540.
- Zwetsloot G and Pot F (2004) The business value of health management. *Journal of Business Ethics* 55(2): 115–124.

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